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(54) **A method and an apparatus for the animation, driven by an audio signal, of a synthesised model of human face**

(57) A method and an apparatus for the animation, driven by an audio signal, of a synthesised human face model are described, that allow the animation of any model complying with the ISO/IEC standard 14496 ("MPEG-4 standard"). The concerned phonemes are derived from the audio signal, and the corresponding visemes are identified within a set comprising both visemes defined by the standard and visemes typical of the language. Visemes are split into macroparameters that define shape and positions of the mouth and jaw of the model and that are associated to values indicating a difference from a neutral position. Such macroparameters are then transformed into face animation parameters complying with the standard, the values of which define the deformation to be applied to the model in order to achieve animation.

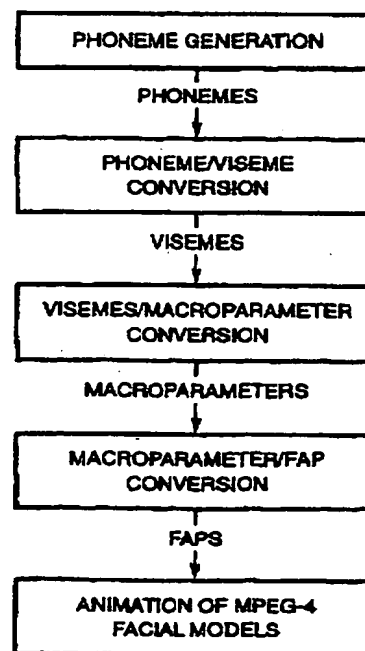


Fig. 2

EP 0 993 197 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 9180

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	ISO/IEC JTC1/SC 29 WG11: "MPEG-4 Overview - (Dublin version) N2323" July 1998 (1998-07) , INTERNATIONAL ORGANIZATION FOR STANDARDIZATION - ORGANISATION INTERNATIONALE DE NORMALISATION XP002120014	1,6,7	H04N7/26
A	* page 22, paragraph 2.5.2.1 - page 23, paragraph 2.5.2.1 * ---	2-5	
Y	US 5 657 426 A (WATERS KEITH ET AL) 12 August 1997 (1997-08-12)	1,6,7	
A	* the whole document *	2-5	
A	--- "INFORMATION TECHNOLOGY - CODING OF AUDIO-VISUAL OBJECTS: VISUAL ISO/IEC 14496-2" INTERNATIONAL ORGANIZATION FOR STANDARDIZATION - ORGANISATION INTERNATIONALE DE NORMALISATION, XX, XX, no. N2202, March 1998 (1998-03), pages 1-329, XP000861689 * page 217 - page 221 * * page 217 - page 221 * ---	1-7	
A	WO 97 36288 A (BREEN ANDREW PAUL ;BOWERS EMMA JANE (GB); BRITISH TELECOMM (GB)) 2 October 1997 (1997-10-02) * the whole document *	1-7	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H04N G10L G06T
A	EP 0 710 929 A (AT & T CORP) 8 May 1996 (1996-05-08) * the whole document * ---	1-7	
-/-			
The present search report has been drawn up for all claims			

EPO FORM 1503 D/L/82 (Rev.01)	Place of search THE HAGUE	Date of completion of the search 1 February 2002	Examiner Giannotti, P
	CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document		

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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 9180

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A,D	<p>FABIO LAVAGETTO: "CONVERTING SPEECH INTO LIP MOVEMENTS: A MULTIMEDIA TELEPHONE FOR HARD OF HEARING PEOPLE"</p> <p>IEEE TRANSACTIONS ON REHABILITATION ENGINEERING, IEEE INC. NEW YORK, US, vol. 3, no. 1, 1 March 1995 (1995-03-01), pages 90-102, XP000501203</p> <p>ISSN: 1063-6528</p> <p>* the whole document *</p> <p>-----</p>	1-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 1 February 2002	Examiner Giannotti, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>----- & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01.02 (P04001)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 99 11 9180

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-02-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5657426	A	12-08-1997	NONE	
WO 9736288	A	02-10-1997	AU 2167097 A	17-10-1997
			CA 2249016 A1	02-10-1997
			CN 1214784 A	21-04-1999
			EP 0890168 A1	13-01-1999
			WO 9736288 A1	02-10-1997
			JP 2000507377 T	13-06-2000
EP 0710929	A	08-05-1996	AU 3668095 A	16-05-1996
			CA 2162199 A1	08-05-1996
			EP 0710929 A2	08-05-1996
			JP 8235384 A	13-09-1996

EPO FORM P0450

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82